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ABSTRACT

Cross-Age Tutoring and School Store, two courses combining classroom learning and application of specific skills outside the classroom are evaluated. Students in Cross-Age Tutoring were taught tutoring and communication skills and spent four days per week tutoring at nearby elementary schools; students in School Store were taught business and interpersonal skills and operated an on campus store. These courses are examples of the "Alternatives" or "Service Opportunities" approaches to substance abuse prevention. The general goals of the courses were to foster positive attitudes and behaviors regarding self, peers, and school. These changes were expected to reduce, in subsequent years, student acceptance and use of psychoactive substances. Process data included: a survey of participants at the end of the course, observation of selected course sessions and practica, and interviews with teachers and some students from each course. Both courses (including practica) were well received by the students. Analyses of covariance did not reveal a coherent pattern of treatment effects. The lack of treatment effects was attributed to a possible failure of the courses to require sustained effort for mastery of goals, and to stimulate adequate commitment among the participating students. (Author/GK)

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Evaluation of Two Service Opportunity Programs for Junior High School Students: First Year Results

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Abstract

Cross-Age Tutoring and School Store, two courses offered to 8th and 9th grade students are evaluated. Each course combined classroom learning and application of specific skills outside the classroom. Students in Cross-Age Tutoring were taught tutoring and communication skills and spent four days per week tutoring at nearby elementary schools. Students in School Store were taught business and interpersonal skills and operated an on-campus store.

These courses are examples of the "Alternatives" or "Service Opportunities" approaches to substance abuse prevention. The general goals of the courses were to foster positive attitudes and behaviors regarding self, peers, and school. These changes were expected to reduce, in subsequent years, student acceptance and use of psychoactive substances.

Students who volunteered to enroll in either Cross-Age Tutoring or School Store were paired on the basis of the course they selected, grade point average, grade level and sex. One student from each pair was randomly assigned to either experimental or control conditions. The experimental students participated in the course they had selected. The control students participated in other elective courses.

Process data included a) a survey of participants at the end of the course, b) observation of selected course sessions and practica, and c) interviews with the teachers and some students from each course. Both courses (including practica) were well received by the students.

Pre- and posttests were administered to all students. Grade point average, discipline, and attendance data were gathered from school records.

Analyses of covariance conducted on the student data did not reveal a coherent pattern of treatment effects. The lack of treatment effects was attributed to a possible failure of the courses a) to require sustained effort for mastery of goals, and b) to stimulate adequate commitment among the participating students.

INTRODUCTION

Alternatives is a conceptual model for the design of substance abuse prevention programs. Unfulfilled needs in the target population are identified, and non-drug means for fulfilling these needs are created. "The model stipulates that Alternatives are voluntary, pleasurable, involving and active, that they must stimulate commitment, and that they should be incompatible with intoxication" (Schaps and Slimmon, Note 1). The model assumes that when individuals possess the knowledge, motivation, and skills to lead active and meaningful lives, the attractiveness of psychoactive substance use is greatly reduced. A recent Surgeon General's report (Note 2) recommended the adoption of a model similar to Alternatives as a means of promoting health:

> Our society needs to find more socially constructive outlets for the interests and energies of children and adolescents. While urbanization and farm mechanization have moved rapidly, alternative activities for the work once required have not been adequately developed. Challenging work for young people is important for more than economic reasons; it helps build self-respect and a better outlook for the future (pg. 128).

Alternatives programs are designed to provide participants both short-term gratification and long-term satisfaction. They can include a variety of experiences: a) physical (e.g., athletics); b) sensory (e.g., massage), c) emotional (e.g., psycho-drama), d) interpersonal (e.g., school clubs), e) mental-intellectual (e.g., chess), f) creative-aesthetic (e.g., crafts), g) experiential (e.g., biofeedback training), h) stylistic (e.g., anti-drug programs), i) social-political (e.g., tutoring), j) philosophical (e.g., values clarification), and k) spiritual-mystical (e.g., meditation) (Cohen, Note 3).

Some activities that have been proposed as Alternatives are compatible with drug or alcohol use (e.g., athletics), and thus do not fit the requirements of the model. Other activities which meet the model's requirements emphasize alteration of conciousness through non-drug means (e.g., biofeedback). We question whether these latter experiences require sufficient involvement, and whether the "natural highs" they are expected to induce can successfully compete with drug use. We believe that the scope of activities suggested by the Alternatives model is too broad. In addition to those characteristics specified above, the most promising alternatives to substance abuse should:

a) provide goals that require sustained effort for mastery;

b) provide opportunities to acquire practical skills which can be used throughout life; and

c) provide valued service to others (Schaps and Slimmon, Note 1).

We have labelled such alternatives Service Opportunities. Participation in a Service Opportunity is hypothesized to lead directly to improved self-concept and internalized locus of control. Furthermore, a Service Opportunity conducted in a school setting should lead to more positive attitudes toward school, fewer discipline problems and improved school attendance. In subsequent years, we expect these changes to reduce both acceptance and use of psychoactive substances.

Two school-based Service Opportunity programs are evaluated in the present study. A junior high school was identified whose administration and staff wished to participate in the study. Resources and constraints existing within the school and the surrounding community were investigated. We developed two Service Opportunity courses and offered them to students as electives: Cross-Age Tutoring and School Store. Each course combined classroom learning and

application of specific skills. Students in Cross-Age Tutoring were taught tutoring and communication skills and spent four days each week tutoring at nearby elementary schools. Students in School Store were taught business and interpersonal skills and operated an on-campus school store (which did not exist prior to the course).

Cross-Age Tutoring is a widely used school-based program that benefits the tutors, the students who are tutored, and the classroom teachers. A recent survey of tutoring projects indicated that in only a small percentage (10%) of ongoing projects was the tutor the focus of the program's benefits (Fitz-Gibbon, Note 4). The coordinators from these projects cited the following program benefits for the tutors: increased cognitive learning, improved attendance, and improved attitudes toward self, peers, teachers, and school.

Several summaries of the research literature on cross-age tutoring are available (Schaps and Slimmon, Note 1; Anania, Easton and Sugarman, Note 5; Fitz-Gibbon, Note 6). These summaries include 20 studies that evaluated the effects on tutors of cross-age tutoring programs. Ten of 15 studies that measured achievement in the subject that was tutored found positive effects on this variable. Four of ten studies that measured self-concept obtained positive effects, and two of four studies that measured attitudes toward school found positive effects. Thus, empirical evidence exists for both cognitive and affective benefits of Cross-Age Tutoring.

In the present study we hypothesized positive effects for participation in Cross-Age Tutoring on social and academic self-esteem, attitudes toward teachers and school, school attendance, locus of control, and discipline problems. Data were collected on a number of other variables, primarily drug-related, in order to assess other possible effects of the course.

School Store was developed as a Service Opportunity for several reasons. A school administrator strongly supported the concept, and student interest was great. The course fulfilled the prerequisites of a Service Opportunity and could attract students who might not be interested otherwise.[1]

We were unable to find evaluations of programs similar to School Store. In the present study, we expected to find positive effects of participation on social self-esteem, attitudes toward school and peers, locus of control, school attendance, and discipline problems. Data were collected on other variables in order to assess other possible effects.

The present study will be continued for an additional year.

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[1]Volunteers for participation in School Store were predominantly male; whereas, primarily females volunteered for Cross-Age Tutoring.

Outcome Method

Assignment of Students to Condition

Eighth and ninth grade students from a predominately white, middle-class, suburban public junior high school participated in this study. The following procedures were employed in assigning the students to condition:

a) The two courses, Cross-Age Tutoring and School Store, were described to all students in the appropriate grade levels during the spring prior to the study;

b) Students were considered eligible for a course if they selected the course as their most preferred elective and obtained written parental permission;[2]

c) Eligible students were matched into pairs on the basis of course selection (Cross-Age Tutoring or School Store), grade level, sex, and grade point average for the prior semester;

d) One student from each pair was randomly assigned to the experimental condition and the other to the control condition.[3]

Students in the experimental condition were enrolled in their preferred elective, Cross-Age Tutoring or School Store. Students in the control condition were enrolled in other elective courses.

In sum, an experimental design was employed in which students who volunteered to participate were matched and then randomly assigned to their preferred course or to a control condition. The assignment procedures maximized the likelihood of equivalence between experimental and control conditions for each separate course, but not between the courses.

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[2]Students who also selected band or foreign language as an elective were considered ineligible for the study due to the school's need to fill these other courses.

[3]Several experimental students could not be scheduled into their selected courses. These students and their matched controls were dropped from the study. This deletion of subjects did not appear to affect randomness.

Subjects

The initial sample of students cross-tabulated by course, grade, sex, and condition appears in Table 1. Table 2 shows the composition of the final sample of students after attrition is taken into account. The extent of attrition (21%) was similar across conditions. The ethnic composition of the sample was also similar across conditions and was predominantly (93%) white.

The number of semesters of Cross-Age Tutoring or School Store completed by the final sample of experimental students is shown in Table 3. Of the 24 students assigned to Cross-Age Tutoring, six did not complete a full semester, ten completed one semester, and eight completed two semesters. Of the 22 students assigned to School Store, 21 completed one semester, and only one student completed two semesters.

For both courses, most experimental students were enrolled during the first semester of the school year. For Cross-Age Tutoring, 20 of the 24 students participated first semester, and for School Store, all 22 students participated first semester.

Cross-Age Tutoring

This course was taught by a faculty member from the science department who also had a credential in remedial reading. The class met daily for one period during the first twelve days of the semester to provide background and training to the tutors. The training covered:

a) basic reading skills for elementary grades;

b) research on teaching and learning;

c) interpersonal skills and characteristics of a "good" tutor.

TABLE 1

INITIAL DISTRIBUTION OF STUDENTS

	Cross-Age Tutoring				School Store				
Condition	grade 8 male	grade 8 female	grade 9 male	grade 9 female	grade 8 male	grade 8 female	grade 9 male	grade 9 female	
Experimental	7	12	2	6	9	5	7	7	55
Control	7	12	2	6	9	5	7	7	55
	14	24	4	12	18	10	14	14	110

TABLE 2

FINAL DISTRIBUTION OF STUDENTS

Condition	Cross-Age Tutoring				School Store				
	grade 8 male	grade 8 female	grade 9 male	grade 9 female	grade 8 male	grade 8 female	grade 9 male	grade 9 female	
Experimental	6	11	1	6	9	4	5	4	46
Control	6	7	1	6	9	3	5	4	41
	12	18	2	12	18	7	10	8	87

TABLE 3

NUMBER OF SEMESTERS OF TREATMENT COMPLETED BY FINAL SAMPLE OF EXPERIMENTAL STUDENTS

Number of Semesters Completed	Cross-Age Tutoring				School Store				
	grade 8 males	grade 8 females	grade 9 males	grade 9 females	grade 8 males	grade 8 females	grade 9 males	grade 9 females	
0	2	3	0	1	0	0	0	0	6
1	1	3	1	5	9	4	5	3	31
2	3	5	0	0	0	0	0	1	9
	6	11	1	6	9	4	5	4	46

After completing the initial training, students began traveling under adult supervision to one of two elementary schools, where they worked with individual children or small groups of children for one classroom period four days each week. The average time spent tutoring was approximately 30 minutes per day.

One day per week, the students met with their teacher on the junior high campus to discuss their experiences. These sessions also included additional training in communication, problem-solving and reading skills. During these sessions, students updated journals documenting their tutoring experiences.

School Store

This course was a one-semester elective taught by a faculty member from the business education department who had previous training in distributive education. The class met one period daily.

The course was divided into three areas on the basis of related job functions:

1) operations - salesperson, cashier, bookkeeper;

2) merchandising - stock clerk, inventory clerk, buyer; and

3) sales promotion - advertising clerk, display person, store decorator.

Self-paced learning modules covered the academic content relevant to each area.

The school store did not exist prior to this study. Hence, during the first four weeks of the first semester the class prepared for the opening of the store. The store was open three times per day for brief periods totaling about 80 minutes daily and was staffed by the students in the course. The teacher and a project staff member supervised the store operation.

The students were organized into three teams corresponding to the three areas of store operation. During class time, students individually or in teams, completed the learning modules related to their area, or they worked at their jobs. Once a week the whole class discussed the progress and planning for the store. Once a month students changed teams to enable them to learn all aspects of store operation.

Process Data

At the end of the first semester, experimental students completed course evaluation forms. Structured and open-ended questionnaire data were obtained regarding participant satisfaction with the two courses.

A project staff member periodically observed both classes (including practica). In addition, interviews were conducted with the teachers and a small sample of students from each class. These observations and interviews have been summarized in two separate reports (Napa Project, Notes 7 and 8).

Self-Report Outcome Data

Pretest data were obtained from students with the Student Questionnaire, an instrument developed for this study. This instrument consisted of two sections. Part 1 contained 18 items selected from the Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965) based upon published psychometric properties.[4] This questionnaire measured the belief in one's own control over, and responsibility for, intellectual-academic successes and failures. Part 2 contained three sets of items: a) the

[4]Four items referring to "parents" were adapted to read "an adult who knows you" in order to conform to California Education Code. When passive parental permission for student participation in a research activity is obtained, questions about family life cannot be asked.

Scholastic subscale from the Secondary-Level of the Self Appraisal Inventory (14 items) (Instructional Objectives Exchange, Note 9), a criterion-referenced measure of academic self-esteem; b) the Authority and Control (10 items) and Interpersonal Relationships With Pupils (12 items) subscales from the Secondary-Level of the School Sentiment Index (Instructional Objectives Exchange, Note 10), a criterion-referenced measure of attitudes toward school; and c) a measure of perceived peer attitudes toward school developed for this study by adapting 11 items from eight instruments that measure attitudes toward school.

Pretest data were also obtained with the Self Observation Scales (Junior High Level, Form C) developed by Stenner and Katzenmeyer (Note 11). This nationally normed instrument had empirically determined scales which measure the ways students perceive themselves and their relationsnips to their peers, their teacher, and their school. The questionnaire contained 72 statements to which students responded "yes" or "no."

Drug-related pretest data were collected using the DAS. This instrument assessed for each of ten substances:[5] the students' lifetime and current use,[6] their attitudes toward use, their intentions to use,[7] their perceptions of peers' attitudes toward use, and their perceptions of the prevalence of

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[5]The substances were alcohol, cigarettes, marijuana or hashish, inhalants, barbiturates or tranquilizers, amphetamines or stimulants, cocaine, PCP, LSD or psychedelics, and heroin or morphine. "Street" names were provided for most substances.

[6]Operationalized as "during the last four weeks."

[7]Operationalized as "during the next year."

peer use. In addition, the DAS contained measures of attitudes toward drug-related behavior, drug knowledge, and the perceived benefits and costs of using three different substances: alcohol, cigarettes, and "pills[8]."

The final pretest measures employed in the data analysis for the present study were derived from a theoretical model and empirical scaling analyses.[9] Random samples of pretest data were selected from students in two junior high schools in grades 7-9. Item means, variances, and intercorrelations were found to be similar across grade levels; thus, scaling procedures were applied across grades. Item intercorrelations from the pretest data were subjected to separate multiple group confirmatory factor analyses.[10] The resultant pretest scales appear in Table 4, which lists the number of items contained in each scale, and their internal consistency reliabilities estimated by coefficient alpha. The final scales included measures of locus of control for success, locus of control for failure, academic self-esteem, social self-esteem, affective teaching climate, attitudes toward school and perceived peer attitudes toward school. The drug-related scales included measures of drug attitudes; drug knowledge; perceived benefits and costs of alcohol, marijuana, and pill use; attitudes toward "soft" and "hard" drug use.[11]

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[8]Operationalized as "pep pills, sleeping pills, uppers, downers, soapers."

[9]The details of the scaling procedures and results have been reported by Moskowitz, Condon, Brewer, Schaps, and Malvin (Note 12) and by Moskowitz, Schaeffer, Condon, Schaps, and Malvin (Note 13).

[10]The matrices were computed using pair-wise deletion of missing values and communalities were inserted into their diagonal elements.

[11]The "soft" substances included alcohol, cigarettes, and marijauna; the "hard" substances included the other seven drugs.

TABLE 4

SELF-REPORT SCALES, NUMBER OF ITEMS AND PRETEST INTERNAL CONSISTENCY RELIABILITIES (COEFFICIENT ALPHA)[a]

Scale	Number of Items	Reliabilities
Locus of Control: Success (Control Suc)	7	.66
Locus of Control: Failure (Control Fail)	7	.51
Academic Self-Esteem (Acad Self)	12	.84
Social Self-Esteem (Social Self)	11	.80
Affective Teaching Climate (Affec Climate)	18	.89
Attitudes Toward School (Att School)	8	.83
Perceived Peer Attitudes Toward School (Peer Att Sch)	8	.74
Drug Knowledge (Knowledge)	7	.40
General Drug Attitudes (General Att)	17	.93
Attitudes Toward Soft Drug Use (Soft Att)	3	.76
Attitudes Toward Hard Drug Use (Hard Att)	7	.93
Perceived Peer Attitudes Toward Soft Drugs (Soft Peer Att)	3	.84
Perceived Peer Attitudes Toward Hard Drugs (Hard Peer Att)	7	.96
Perceived Benefits of Alcohol Use (Alc Benefits)	8	.85
Perceived Benefits of Marijuana Use (Pot Benefits)	8	.91

Scale	Number of Items	Reliabilities
Perceived Benefits of Pill Use (Pill Benefits)	8	.91
Perceived Costs of Alcohol Use (Alc Costs)	5	.84
Perceived Costs of Marijuana Use (Pot Costs)	5	.90
Perceived Costs of Pill Use (Pill Costs)	5	.89
Perceived Peer Use of Soft Drugs (Soft Peer Use)	3	.82
Perceived Peer Use of Hard Drugs (Hard Peer Use)	7	.96
Involvement in Alcohol Use (Alc Involve)	3	.88
Involvement in Cigarette Use (Cig Involve)	3	.91
Involvement in Marjuana Use (Pot Involve)	3	.95
Involvement in Inhalant Use (Inh Involve)	3	.70
Involvement in Barbiturate Use (Barb Involve)	3	.89
Involvement in Amphetamine Use (Amp Involve)	3	.90
Involvement in Cocaine Use (Coc Involve)	3	.88
Involvement in PCP Use (PCP Involve)	3	.86
Involvement in LSD Use (LSD Involve)	3	.87
Involvement in Heroin Use (Her Involve)	3	.77

[a]N = 586 for the drug-related scales and N = 551 for the other scales

perceived peer attitudes toward soft and hard drug use; and involvement in use for each of the ten substances.[12] The reliabilities obtained were adequate for all scales except drug knowledge.[13]

Posttest data were obtained with the DAS and a revised version of the Student Questionnaire. The revised instrument included all items employed in the final pretest measures. For some items the response format differed from the pretest; thus, the posttest scores were not comparable with the pretest scores. The locus of control for success scale contained five extra items and the failure scale contained three extra items from the Intellectual Achievement Responsibility Questionnaire.

Student Archival Outcome Data

In addition to the self-report data gathered directly from students, we obtained student discipline records for the year of the study as well as the prior year. These records were maintained by the deans in the school to document student behavior problems. Two indices were constructed: a) a drug behavior problem index (Drug Problems) consisting of categories involving use, possession, or sale of tobacco, alcohol, marijuana and other drugs, and b) a general behavior problem index (Non-drug Problems) containing categories for all other types of student misbehavior.

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[12] The involvement scales consisted of items assessing current use, lifetime use, and intentions to use.

[13] Drug knowledge items were selected from a drug education course that was evaluated in another study and were not representative of the domain of general drug knowledge items. Furthermore, knowledge about drugs comes from a variety of sources and may be multidimensional, resulting in attenuated internal consistency.

Other student records were obtained from the school district for the year of the study as well as the prior year. The total number of unexcused absences for each school year was used as measures of attendance (Unex Abs). This type of absence occured when a student did not provide the school with a parental excuse indicating that the student was sick. Grade point average for each Spring semester, where academic grades from all courses were weighted equally, served as measures of academic achievement.

Survey Administration Procedures

The pretest was administered in May 1979, and the posttest in May 1980. by four substitute teachers trained in survey administration. The questionnaires were administered during two regular classes. The Student Questionnaire and the Self Observation Scales (pretest only) were administered during the first session, and the DAS was administered during the second session. Make-up sessions were held for students who were absent for the original sessions.

The administration procedure stressed confidentiality. Students were identified by their school district identification numbers. Questionnaires were pre-labeled with student names on the cover sheet and student identification numbers on page one. In a prepared statement, administrators assured students of complete confidentiality and explained the need for identification numbers as a way of tracking students over time. For the DAS administration, to further enhance the confidentiality induction, students were instructed to tear off the cover page that displayed their names.

Data Analysis

The analysis of outcome data compared all experimental students with all control students. A consequence of this approach was that the experimental

condition included six students (all from Cross-Age Tutoring) who did not receive a full semester of the treatment either because they dropped the class or because they were dropped for their misbehavior.[14] Because these students differed from the other experimental students, deleting them from the analysis would have biased the results toward finding a treatment effect. Because we kept these students in the analysis, our estimate of the treatment effect is conservative if the treatment is defined as having participated at least one semester. The treatment effect estimate is unbiased if the treatment is defined as any participation at all. We chose this latter definition because it increases the external validity of the study in addition to preserving internal validity.[15]

The primary analysis strategies were univariate analyses of variance and covariance. ANCOVA served two functions. It eliminated some of the initial bias in the assignment to conditions, and it increased power. With a significance level of .05 and power (the likelihood of detecting a real effect) set at .80, ANOVA was capable of detecting an effect size as small as .62 SD.[16] With a pretest-posttest correlation of .52 (the median r), the minimum detectable effect size using ANCOVA was .45 SD. We have set the Type I error rate for each analysis at .05. Since we conducted many univariate analyses, isolated effects must be interpreted cautiously, because they may

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[14]These students participated from 2 to 14 weeks (M = 7 weeks).

[15]The average experimental student participated for 19 weeks (SD = 8.4). While it would have been interesting to examine the relationship between student outcomes and duration of treatment, the small sample size precluded performing this analysis.

[16]SD refers to the pooled within-group standard deviation.

be due to experiment-wise Type I error. Hence, interpretation of results is based on patterns in the data rather than single findings.

Rules were set for handling missing data in computing scale scores. A scale score was computed for a student if at least 60% of the items comprising that scale were present. Any missing item score was replaced by the mean for that item in the appropriate cell of the experimental design. This procedure utilized most of the item data and provided unbiased cell means. However, the procedure constrained cell variances and inflated degrees of freedom artificially. When more than 40% of the items comprising a scale were missing, the student received a missing value for that scale, and the case was not employed in the analysis of that scale.

Outcome Results

Course Evaluation

The structured feedback data obtained from participants is summarized in Table 5. Students generally rated the course favorably with regard to a) how the courses compared with other electives; b) whether the courses should be offered again; c) how much they learned; d) how much they enjoyed the practicum experience; and e) how helpful they felt that the practicum was for the recipients. Students in School Store generally liked the daily class meetings, whereas those in Cross-Age Tutoring generally disliked the weekly class meetings.

Open-ended comments were also obtained. Participants in School Store generally reported that they liked working in the store, and few criticized the course. Participants in Cross-Age Tutoring generally reported that they liked tutoring, but that they did not like attending the weekly class. They found the class sessions to be irrelevant, repetitive and boring.

Of the 27 students initially enrolled in Cross-Age Tutoring, seven voluntarily dropped the course. Four students left after a few weeks because they disliked tutoring; two left midway through the first semester because they disliked walking to the elementary school where they tutored; and one left during the second semester because she was bored with the course. In addition, two students were dropped by the teacher during the second semester, one for poor attendance and one for poor performance. Thus, nine (33%) of the

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR COURSE EVALUATION DATA

Cross-Age Tutoring and School Store	Cross-Age Tutoring (N = 17) M	Cross-Age Tutoring (N = 17) SD	School Store (N = 14) M	School Store (N = 14) SD
1. How much have you liked the class meetings? (Ratings range from Liked [4] to Disliked [1]).	2.17	.95	3.36	.93
2. How does this class compare with other electives you have taken? (Ratings range from Interesting [4] to Boring [1]).	3.53	.72	3.14	.86
3. Do you think this class should be offered again? (Ratings range from Yes [2] to No [1]).	2.00	.00	1.86	.36
4. How much have you learned in this class? (Ratings range from A Lot [4] to Nothing [1]).	3.70	.46	3.79	.43
Cross-Age Tutoring Only				
5. How much did you like tutoring? (Ratings range from A Lot [4] to Not At All [1]).	3.64	.61	-	-
6. How much did the student you tutored learn from you? (Ratings range from A Lot [4] to Nothing [1]).	3.58	.57	-	-
7. Was the student you tutored happy you were there? (Ratings range from A Lot [4] to Not at all [1]).	3.76	.44	-	-
School Store Only				
8. How much do you feel your work in the school store was helpful to the students at your school? (Ratings range from A Lot [4] to Not at All [1].	-	-	3.29	.83
9. How much did the student body appreciate your work with the school store? (Ratings range from A Lot [4] to Not At All [1]).	-	-	3.50	.65

original Cross-Age Tutoring experimental students probably were dissatisfied with the course. Because most of these students were not enrolled at the end of the first semester, their attitudes were not reflected in the process data discussed above.

Initial Equivalence

Analyses were conducted to assess the initial equivalence of experimental and control groups. The means and standard deviations for all pretest and posttest measures are listed in Tables 6-9 for each course, grade, sex, and condition. For the attendance, discipline and drug (except knowledge) variables, a high score is undesirable; whereas, for all other variables, a high score is desirable. The posttest results are discussed later.

Complete factorial analyses of variance were performed on the pretest measures with course (Cross-Age Tutoring or School Store), grade, sex, and condition (experimental or control) as factors in the design. The four-way interaction term was pooled with the residual. Drug problems and the hard substance involvement measures were not analyzed due to limited variance in most cells. Significant interactions with condition were obtained on 15 measures. On these measures simple effects for condition were examined. An effect size of at least one-half of the control group standard deviation was considered evidence of initial nonequivalence. Table 10 shows the direction of the bias for initial differences obtained between the experimental and control conditions. A positive sign indicates an initial bias in favor of the experimental condition; i.e., as compared to controls, the experimentals scored more desirably on the measure. A negative sign indicates initial bias in favor of the control condition. A consistent pattern was obtained for two

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR CROSS-AGE TUTORING
BY SEX BY CONDITION FOR GRADE 8

		Male Students (N=12)				Female Students (N=18)			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Succ	Pre	1.91	.17	1.86	.22	1.96	.67	1.90	.16
	Post	1.81	.19	1.81	.25	1.90	.11	1.92	.08
Control Fail	Pre	1.62	.15	1.76	.17	1.81	.16	1.90	.16
	Post	1.64	.26	1.63	.29	1.73	.26	1.81	.18
Acad Self	Pre	2.46	.11	2.28	.11	2.54	.46	2.48	.17
	Post	3.00	.28	2.41	.36	2.77	.45	2.82	.39
Social Self	Pre	1.79	.19	1.70	.36	1.97	.06	1.86	.14
	Post	3.00	.25	2.82	.49	3.35	.37	3.14	.25
Affec Climate	Pre	2.40	.12	2.30	.14	2.55	.46	2.35	.15
	Post	2.57	.63	2.53	.28	3.09	.55	2.80	.24
Att Sch	Pre	1.78	.21	1.33	.32	1.85	.14	1.81	.23
	Post	2.34	.39	2.25	.59	2.75	.60	2.87	.47
Peer Att Sch	Pre	2.71	.25	2.49	.25	2.83	.39	2.63	.39
	Post	2.48	.40	2.53	.37	2.71	.34	2.66	.29
GPA	Pre	3.17	.62	3.11	.71	3.47	.46	4.09	.51
	Post	3.01	.46	3.27	.77	3.74	.74	3.83	.55
Unex Abs	Pre	1.67	2.42	2.50	6.12	1.27	1.95	2.00	4.04
	Post	.33	.82	3.00	6.39	3.55	4.78	1.00	1.00
Non-drug Prob	Pre	.83	1.60	1.17	1.33	.09	.30	.00	.00
	Post	1.67	.41	1.50	2.35	.36	.67	.00	.00
Knowledge	Pre	2.02	1.23	3.17	1.73	2.92	1.51	1.58	1.28
	Post	2.17	.98	3.00	1.41	3.10	1.45	2.57	1.51
General Drug Att	Pre	1.79	.56	1.92	.94	1.83	.80	1.81	.26
	Post	2.37	.82	2.08	.77	1.95	.86	1.67	.34
Soft Att	Pre	1.50	.78	1.72	.77	2.06	.55	1.60	.36
	Post	1.72	.65	1.56	.46	2.30	.89	1.71	.56
Hard Att	Pre	1.00	.00	1.07	.12	1.12	.26	1.18	.37
	Post	1.31	.48	1.18	.37	1.40	.62	1.08	.22

Table 6 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Soft Peer Att	Pre	1.50	.66	3.33	1.46	2.91	.99	2.76	.71
	Post	1.76	.88	3.27	.43	3.04	1.05	2.95	.85
Hard Peer Att	Pre	1.02	.06	3.05	1.73	1.38	.52	2.04	.99
	Post	1.31	.48	2.37	1.16	2.00	.93	2.59	.85
Alc Benefits	Pre	1.02	.05	1.42	.32	2.00	.87	1.35	.31
	Post	1.27	.27	1.63	.69	2.12	.75	1.66	.41
Pot Benefits	Pre	1.00	.00	1.36	.38	2.11	1.04	1.47	.66
	Post	1.63	.77	1.40	.46	2.25	1.03	1.73	.53
Pill Benefits	Pre	1.15	.36	1.15	.23	1.78	1.05	1.30	.37
	Post	1.21	.33	1.27	.41	1.83	.89	1.58	.52
Alc Costs	Pre	1.73	.63	1.70	.58	1.60	.55	1.63	.42
	Post	1.63	.70	1.73	.59	1.82	.53	1.73	.46
Pot Costs	Pre	1.40	.49	1.30	.56	1.78	.71	1.52	.56
	Post	1.87	1.14	1.40	.63	1.75	.79	1.64	.57
Pill Costs	Pre	1.17	.32	1.17	.41	1.58	.57	1.40	.55
	Post	1.23	.37	1.37	.57	1.48	.62	1.46	.54
Soft Peer Use	Pre	24.97	18.04	55.11	26.43	36.53	24.54	21.43	15.03
	Post	43.42	31.82	43.56	19.07	40.32	23.51	39.81	16.32
Hard Peer Use	Pre	14.68	15.06	34.52	41.25	7.49	9.93	9.46	9.17
	Post	25.38	33.97	7.80	6.42	12.56	14.30	15.93	6.21
Alc Involve	Pre	1.58	.52	2.56	1.11	1.92	.92	1.29	.49
	Post	2.00	.70	2.89	.98	2.43	.86	1.76	.74
Cig Involve	Pre	1.33	.41	1.50	.59	1.60	1.20	1.09	.16
	Post	1.11	.17	1.39	.14	2.00	1.62	1.14	.18
Pot Involve	Pre	1.04	.07	1.28	.53	1.35	.77	1.00	.00
	Post	1.00	.00	1.89	1.46	1.77	1.21	1.00	.00
Inhalant Involve	Pre	1.02	.02	1.11	.27	1.09	.22	1.00	.00
	Post	1.00	.00	1.06	.13	1.13	.28	1.10	.25
Barbiturate Involve	Pre	1.01	.02	1.11	.27	1.00	.01	1.00	.00
	Post	1.00	.00	1.00	.00	1.30	.67	1.00	.00
Amphetamine Involve	Pre	1.01	.01	1.11	.27	1.00	.01	1.00	.00
	Post	1.06	.13	1.39	.95	1.20	.63	1.00	.00
Cocaine Involve	Pre	1.01	.02	1.06	.13	1.00	.01	1.00	.00
	Post	1.06	.13	1.17	.41	1.13	.32	1.00	.00

Table 6 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
PCP Involve	Pre	1.01	.01	1.06	.13	1.00	.01	1.00	.00
	Post	1.00	.00	1.67	1.63	1.00	.00	1.00	.00
LSD Involve	Pre	1.01	.01	1.06	.13	1.00	.01	1.00	.00
	Post	1.00	.00	1.00	.00	1.00	.00	1.00	.00
Heroin Involve	Pre	1.01	.01	1.06	.13	1.00	.00	1.00	.00
	Post	1.00	.00	1.00	.00	1.00	.00	1.00	.00

TABLE 7

MEANS AND STANDARD DEVIATIONS FOR CROSS-AGE TUTORING BY SEX BY CONDITION FOR GRADE 9

		Male Students[a] (N=2)				Female Students (N=12)			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Suc	Pre	-	-	-	-	1.90	.12	1.83	.12
	Post	-	-	-	-	1.95	.07	1.93	.06
Control Fail	Pre	-	-	-	-	1.79	.23	2.00	.01
	Post	-	-	-	-	1.72	.31	1.83	.19
Acad Self	Pre	-	-	-	-	2.48	.62	2.37	.53
	Post	-	-	-	-	2.98	.86	2.71	.67
Social Self	Pre	-	-	-	-	1.80	.23	1.83	.15
	Post	-	-	-	-	2.96	.55	3.38	.28
Affec Climate	Pre	-	-	-	-	2.23	.48	2.34	.40
	Post	-	-	-	-	2.81	.77	2.78	.52
Att Sch	Pre	-	-	-	-	1.83	.07	1.66	.15
	Post	-	-	-	-	2.98	.44	2.44	.49
Peer Att Sch	Pre	-	-	-	-	2.42	.39	2.38	.38
	Post	-	-	-	-	2.62	.37	2.36	.33
GPA	Pre	-	-	-	-	3.56	.73	3.58	.68
	Post	-	-	-	-	3.30	1.23	3.37	.83
Unex Abs	Pre	-	-	-	-	1.33	2.42	1.83	2.23
	Post	-	-	-	-	5.00	11.28	4.83	5.04
Non-drug Prob	Pre	-	-	-	-	.33	.52	.83	2.04
	Post	-	-	-	-	.50	.84	.67	1.63
Knowledge	Pre	-	-	-	-	3.84	1.59	3.21	1.07
	Post	-	-	-	-	2.50	1.05	3.67	1.21
General Drug Att	Pre	-	-	-	-	1.85	.82	1.90	.93
	Post	-	-	-	-	2.40	1.22	2.75	1.03
Soft Att	Pre	-	-	-	-	1.89	1.02	1.87	.56
	Post	-	-	-	-	2.39	.93	2.61	.61
Hard Att	Pre	-	-	-	-	1.26	.34	1.31	.50
	Post	-	-	-	-	1.81	.72	1.62	.72

Table 7 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Soft Peer Att	Pre	-	-	-	-	3.78	1.13	3.13	1.24
	Post	-	-	-	-	3.33	.79	4.26	.51
Hard Peer Att	Pre	-	-	-	-	3.33	.81	2.55	1.38
	Post	-	-	-	-	2.33	.78	3.76	.99
Alc Benefits	Pre	-	-	-	-	1.97	.89	1.66	.74
	Post	-	-	-	-	2.02	1.26	2.00	.68
Pot Benefits	Pre	-	-	-	-	2.20	.96	2.00	.98
	Post	-	-	-	-	2.31	1.25	2.48	.97
Pill Benefits	Pre	-	-	-	-	1.82	.81	1.81	.54
	Post	-	-	-	-	1.67	.92	1.69	.76
Alc Costs	Pre	-	-	-	-	1.77	.69	1.80	.55
	Post	-	-	-	-	2.27	.85	2.37	.23
Pot Costs	Pre	-	-	-	-	2.10	1.15	1.80	.75
	Post	-	-	-	-	2.43	1.00	2.37	.79
Pill Costs	Pre	-	-	-	-	1.60	.76	1.52	.59
	Post	-	-	-	-	2.27	.85	1.90	.73
Soft Peer Use	Pre	-	-	-	-	45.35	22.53	50.92	24.71
	Post	-	-	-	-	33.70	12.61	51.33	19.32
Hard Peer Use	Pre	-	-	-	-	18.82	12.36	29.56	40.02
	Post	-	-	-	-	6.77	8.73	19.13	13.31
Alc Involve	Pre	-	-	-	-	1.67	1.16	2.33	.98
	Post	-	-	-	-	2.39	1.12	3.11	1.11
Cig Involve	Pre	-	-	-	-	1.78	1.00	1.92	1.84
	Post	-	-	-	-	2.22	1.34	2.45	1.11
Pot Involve	Pre	-	-	-	-	1.61	1.00	1.75	1.50
	Post	-	-	-	-	2.28	1.61	2.56	1.92
Inhalant Involve	Pre	-	-	-	-	1.00	.00	1.17	.34
	Post	-	-	-	-	1.33	.42	1.11	.27
Barbiturate Involve	Pre	-	-	-	-	1.00	.00	1.00	.00
	Post	-	-	-	-	1.22	.40	1.50	.84
Amphetamine Involve	Pre	-	-	-	-	1.00	.00	1.00	.00
	Post	-	-	-	-	1.67	1.48	1.67	1.03
Cocaine Involve	Pre	-	-	-	-	1.00	.00	1.08	.17
	Post	-	-	-	-	1.11	.27	1.45	.81

Table 7 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
PCP Involve	Pre	-	-	-	-	1.00	.00	1.00	.00
	Post	-	-	-	-	1.00	.00	1.33	.82
LSD Involve	Pre	-	-	-	-	1.00	.00	1.17	.34
	Post	-	-	-	-	1.00	.00	1.33	.67
Heroin Involve	Pre	-	-	-	-	1.00	.00	1.00	.00
	Post	-	-	-	-	1.00	.00	1.22	.54

[a]Data are not tabled because there was only one subject in each condition.

TABLE 8

MEANS AND STANDARD DEVIATIONS FOR SCHOOL STORE
BY SEX BY CONDITION FOR GRADE 8

		Male Students (N=18)				Female Students (N=7)			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Succ	Pre	1.78	.11	1.80	.20	1.82	.08	1.81	.33
	Post	1.89	.09	1.67	.25	1.77	.11	1.85	.13
Control Fail	Pre	1.77	.15	1.68	.36	1.82	.18	1.71	.25
	Post	1.74	.20	1.70	.26	1.80	.20	1.77	.06
Acad Self	Pre	2.43	.43	2.33	.44	2.27	.23	2.44	.91
	Post	2.83	.63	2.48	.82	2.67	.23	3.30	.29
Social Self	Pre	1.78	.26	1.84	.27	1.70	.19	1.77	.32
	Post	3.00	.53	2.90	.63	3.05	.19	3.24	.22
Affec Climate	Pre	2.37	.17	2.06	.40	2.40	.09	2.67	.23
	Post	2.82	.32	2.33	.71	2.84	.35	3.13	.36
Att Sch	Pre	1.59	.32	1.38	.34	1.28	.16	1.94	.08
	Post	2.32	.74	2.17	1.01	2.53	.21	3.04	.48
Peer Att Sch	Pre	2.60	.28	2.44	.33	2.54	.28	3.00	.46
	Post	2.50	.33	2.13	.55	2.38	.10	2.76	.18
GPA	Pre	3.79	.54	3.20	.57	3.56	.48	3.50	.75
	Post	3.54	.73	3.30	.78	3.32	.84	4.16	.48
Unex Abs	Pre	3.11	4.62	.33	.50	.75	.96	1.33	1.15
	Post	1.33	2.18	.78	1.30	.00	.00	.67	.58
Non-drug Prob	Pre	.00	.00	.56	.73	.75	1.50	.33	.58
	Post	.22	.67	.78	.97	.75	.96	.00	.00
Knowledge	Pre	3.67	1.22	3.33	1.94	2.50	.58	2.00	1.73
	Post	2.33	.50	2.33	1.41	3.50	1.00	2.67	.58
General Drug Att	Pre	2.17	1.14	2.58	1.18	2.66	.48	1.47	.58
	Post	2.40	1.23	2.91	1.40	2.40	.69	1.59	.69
Soft Att	Pre	2.26	.85	2.59	1.25	2.50	.80	1.50	.17
	Post	2.19	.85	2.66	1.45	2.42	.42	1.67	.58
Hard Att	Pre	1.81	1.17	1.61	1.38	1.39	.44	1.11	.20
	Post	1.66	.82	1.64	1.32	1.29	.26	1.00	.00

Table 8 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Soft Peer Att	Pre	2.37	.74	2.81	1.50	3.08	.57	1.50	.71
	Post	2.85	.82	3.38	1.15	3.50	.58	2.67	.94
Hard Peer Att	Pre	2.02	1.32	1.88	1.35	2.25	.91	1.00	.00
	Post	1.90	1.05	2.22	1.50	2.32	.46	1.00	.00
Alc Benefits	Pre	1.67	.72	1.74	1.08	1.63	.27	1.13	.13
	Post	1.47	.52	2.11	1.10	1.66	.40	1.25	.43
Pot Benefits	Pre	1.61	.75	1.90	1.24	1.88	.57	1.09	.08
	Post	1.67	1.00	2.35	1.31	2.04	.74	1.25	.43
Pill Benefits	Pre	1.57	.66	1.52	1.04	1.72	.47	1.13	.22
	Post	1.38	.61	1.42	.86	1.34	.32	1.25	.43
Alc Costs	Pre	2.20	.65	2.36	1.08	2.40	.59	1.60	.53
	Post	2.13	.62	2.53	1.16	2.35	.41	1.53	.76
Pot Costs	Pre	1.76	.95	2.33	1.25	2.25	.41	1.27	.31
	Post	2.02	1.12	2.53	1.27	2.36	.25	1.13	.23
Pill Costs	Pre	1.56	.60	1.71	1.12	1.95	.30	1.13	.12
	Post	1.82	.91	1.98	1.04	2.27	.31	1.13	.23
Soft Peer Use	Pre	23.07	28.50	49.83	40.01	29.83	22.09	17.89	2.99
	Post	32.37	23.26	48.81	21.16	33.17	23.15	32.78	17.51
Hard Peer Use	Pre	13.09	23.02	34.78	38.90	1.43	2.86	5.31	5.01
	Post	8.51	12.29	13.79	14.08	4.50	5.26	16.67	28.87
Alc Involve	Pre	2.74	1.31	2.64	1.25	2.75	1.42	1.11	.19
	Post	2.71	1.06	3.19	1.33	2.42	1.26	1.56	.51
Cig Involve	Pre	1.63	1.05	2.02	1.71	2.04	1.13	1.33	.34
	Post	1.33	.58	2.26	1.64	1.83	1.10	1.78	.84
Pot Involve	Pre	1.74	1.51	1.83	1.62	1.33	.47	1.00	.00
	Post	1.81	1.29	2.85	1.81	1.33	.67	1.11	.19
Inhalant Involve	Pre	1.48	1.22	1.30	.89	1.00	.00	1.00	.00
	Post	1.15	.34	1.30	.89	1.00	.00	1.00	.00
Barbiturate Involve	Pre	1.30	.89	1.34	1.00	1.00	.00	1.00	.00
	Post	1.11	.33	1.41	1.00	1.00	.00	1.00	.00
Amphetamine Involve	Pre	1.44	1.33	1.52	1.10	1.00	.00	1.00	.00
	Post	1.15	.34	1.41	.70	1.00	.00	1.00	.00
Cocaine Involve	Pre	1.44	1.33	1.45	1.33	1.00	.00	1.00	.00
	Post	1.26	.43	1.78	1.55	1.08	.17	1.00	.00

Table 8 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
PCP Involve	Pre	1.44	1.33	1.37	1.11	1.00	.00	1.00	.00
	Post	1.19	.38	1.07	.22	1.00	.00	1.00	.00
LSD Involve	Pre	1.33	1.00	1.45	1.33	1.00	.00	1.00	.00
	Post	1.22	.44	1.22	.66	1.00	.00	1.00	.00
Heroin Involve	Pre	1.37	1.11	1.37	1.11	1.00	.00	1.00	.00
	Post	1.30	.89	1.37	1.11	1.00	.00	1.00	.00

TABLE 9

MEANS AND STANDARD DEVIATIONS FOR SCHOOL STORE
BY SEX BY CONDITION FOR GRADE 9

		Male Students (N=10)				Female Students (N=8)			
		Experimental		Control		Experimental		Control	
Measure	Test	M	SD	M	SD	M	SD	M	SD
Control Succ	Pre	1.94	.08	1.72	.20	1.93	.15	2.00	.00
	Post	1.83	.17	1.83	.10	1.92	.06	1.94	.07
Control Fail	Pre	1.82	.08	1.82	.27	1.79	.09	1.89	.22
	Post	1.68	.19	1.62	.33	1.80	.18	1.93	.10
Acad Self	Pre	2.26	.21	2.18	.35	2.54	.40	2.17	.36
	Post	2.72	.33	2.63	.28	3.02	.43	2.94	.26
Social Self	Pre	1.77	.15	1.84	.14	1.72	.26	1.92	.09
	Post	3.05	.31	3.00	.14	3.25	.48	3.23	.53
Affec Climate	Pre	2.32	.29	2.23	.29	2.42	.22	2.25	.47
	Post	2.74	.37	2.86	.42	2.99	.41	3.13	.37
Att Sch	Pre	1.66	.06	1.35	.28	1.72	.26	1.75	.23
	Post	2.43	.47	2.43	.36	2.91	.44	2.79	.67
Peer Att Sch	Pre	2.51	.27	2.32	.38	2.41	.49	2.54	.12
	Post	2.53	.55	2.55	.32	2.47	.28	2.72	.12
GPA	Pre	3.25	.57	3.50	.58	3.55	.51	3.23	.50
	Post	3.52	.47	3.43	.54	3.53	.29	3.97	.59
Unex Abs	Pre	1.00	2.24	1.50	1.29	.25	.50	.75	.96
	Post	1.80	4.02	.40	.89	1.50	3.00	.75	.96
Non-drug Prob	Pre	2.00	2.35	.50	.58	.00	.00	.75	1.50
	Post	1.20	1.10	.20	.45	.00	.00	.00	.00
Knowledge	Pre	2.40	1.14	3.50	1.73	4.00	.82	4.00	.82
	Post	2.40	1.34	3.60	1.52	3.00	.82	2.50	1.91
General Drug Att	Pre	2.82	.55	2.81	1.49	1.93	.30	2.21	1.49
	Post	2.58	.93	2.63	.85	2.84	.52	2.16	.80
Soft Att	Pre	2.73	1.55	2.00	.82	1.84	.70	2.08	.99
	Post	2.60	1.12	2.14	1.04	2.75	.32	2.09	.80
Hard Att	Pre	1.60	.66	1.64	.59	1.07	.15	1.50	1.00
	Post	1.26	.35	1.60	.89	1.61	.55	1.18	.36

Table 9 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
Soft Peer Att	Pre	3.46	.60	3.03	.07	3.25	.63	3.00	.47
	Post	3.60	1.09	2.93	1.12	3.92	.63	3.25	.74
Hard Peer Att	Pre	2.37	.89	2.25	.50	2.61	.90	2.22	1.63
	Post	1.80	.84	2.23	.83	3.07	.82	1.86	.74
Alc Benefits	Pre	2.35	.95	2.00	.20	1.60	.45	1.66	1.01
	Post	2.35	.69	1.78	.73	2.35	.47	1.53	.48
Pot Benefits	Pre	2.35	.63	2.00	.35	1.63	.59	1.94	1.19
	Post	2.30	.69	1.78	.74	1.97	.56	1.60	.78
Pill Benefits	Pre	2.28	.83	1.94	.16	1.38	.27	1.78	1.25
	Post	1.68	.54	1.40	.43	1.66	.52	1.31	.47
Alc Costs	Pre	2.48	.39	2.40	1.07	1.95	.81	1.85	.85
	Post	2.72	.97	2.90	.68	2.35	.25	1.90	.62
Pot Costs	Pre	2.44	.43	2.65	1.20	1.65	.57	1.90	1.23
	Post	2.08	.61	2.00	.91	2.45	.41	1.70	.87
Pill Costs	Pre	2.24	.26	2.40	1.15	1.60	.71	1.80	1.23
	Post	1.75	.57	2.00	.86	2.00	.43	1.60	.77
Soft Peer Use	Pre	47.43	4.76	42.42	16.25	40.83	7.77	63.17	19.21
	Post	49.18	25.48	23.90	22.38	64.58	27.32	50.21	16.11
Hard Peer Use	Pre	4.96	7.11	14.32	13.00	17.64	8.68	26.45	30.52
	Post	5.20	5.02	4.80	5.76	12.75	9.57	10.25	10.72
Alc Involve	Pre	3.33	1.05	3.08	1.20	2.00	.61	2.33	1.36
	Post	2.97	1.22	3.00	1.33	2.42	.32	2.58	1.37
Cig Involve	Pre	1.93	.68	2.00	2.00	1.50	.64	1.92	.69
	Post	1.63	.18	1.87	1.15	2.17	.79	2.17	1.35
Pot Involve	Pre	2.13	1.50	2.50	1.82	1.17	.34	2.00	2.00
	Post	1.58	.68	2.13	1.76	2.33	1.09	2.25	1.89
Inhalant Involve	Pre	1.00	.00	1.08	.17	1.00	.00	1.25	.50
	Post	1.00	.00	1.13	.30	1.25	.32	1.00	.00
Barbiturate Involve	Pre	1.00	.00	1.42	.63	1.00	.00	1.33	.67
	Post	1.00	.00	1.33	.75	1.00	.00	1.08	.17
Amphetamine Involve	Pre	1.00	.00	1.42	.63	1.08	.17	1.75	1.50
	Post	1.00	.00	1.53	1.19	1.08	.17	1.33	.67
Cocaine Involve	Pre	1.00	.00	1.17	.34	1.00	.00	1.25	.50
	Post	1.00	.00	1.27	.59	1.08	.17	1.00	.00

Table 9 (continued)

Measure	Test	Male Students				Female Students			
		Experimental		Control		Experimental		Control	
		M	SD	M	SD	M	SD	M	SD
PCP Involve	Pre	1.00	.00	1.00	.00	1.00	.00	1.00	.00
	Post	1.00	.00	1.07	.15	1.00	.00	1.00	.00
LSD Involve	Pre	1.00	.00	1.00	.00	1.00	.00	1.08	.17
	Post	1.00	.00	1.07	.15	1.00	.00	1.00	.00
Heroin Involve	Pre	1.00	.00	1.00	.00	1.00	.00	1.00	.00
	Post	1.00	.00	1.00	.00	1.00	.00	1.00	.00

TABLE 10

DIRECTION OF BIAS FOR INITIAL DIFFERENCES BETWEEN EXPERIMENTAL AND CONTROL CONDITIONS

Pretest Measure	Cross-Age Tutoring				School Store			
	grade 8 males	grade 8 females	grade 9[a] males	grade 9 females	grade 8 males	grade 8 females	grade 9 males	grade 9 females
Non Drug Prob					+	-		+
GPA		-			+		-	+
Affec Climate	+	+			+	-		
Acad Self	+							+
Att School	+			+	+	-	+	
Peer Att School	+	+				-	+	-
Alc Costs								
Pot Benefits	+	-			-	-		
Pill Costs						-		
Gen Drug Att						-		
Soft Att		-				-	-	
Soft Peer Att	+			-		-	-	-
Hard Peer Att	+	+		-		-		
Alc Involve	+	-		+		-		
Cig Involve		-				-		+

[a]No comparisons were performed since there was only one subject in each condition

of the eight (course-grade-sex) groups. The assignment of grade 8 males to the Cross-Age Tutoring course was biased in favor of the experimental condition. The assignment of grade 8 females to the School Store course was biased in favor of the control condition. The pattern of initial differences for the other six groups was mixed indicating that no consistent biases existed due to initial non-equivalence.

Outcome Analyses

Complete factorial analyses of covariance were performed on the posttest measures with course selection (Cross-Age Tutoring or School Store) grade, sex, and condition (experimental or control) as factors in the design. The corresponding pretest was employed as the covariate, and the four-way interaction term was pooled with the residual. Drug Problems and the hard substance involvement scales were not analyzed due to limited variance in most cells and heterogeneity problems.

The results related to condition are summarized in Table 11. Significant interactions with condition were obtained on five of the 27 measures: Acad Self, General Att, Hard Att, Hard Peer Att, and Pot Involve. On these five measures the appropriate simple effects for condition were examined. On two of these measures a significant simple effect was found. A negative effect was found on Hard Att, t (42) = 2.14, $p < .05$, for female students. As compared to control females, experimental females in both courses had less negative attitudes toward hard substances (i.e., were more pro-drug). A positive effect was obtained for females in Cross-Age Tutoring, t (27) = 3.04, $p < .01$. As compared to their controls, females assigned to Cross-Age Tutoring

perceived that their peers' attitudes toward hard substances were more negative, (i.e., anti-drug). On the other three measures, none of the simple effects for condition obtained significance.

Because of inadequate power in the present study, the results were also examined with the Type I error rate set at .10. Interactions with condition were obtained on six additional measures: Non-drug Prob, Peer Att School, Pill Costs, Soft Peer Att, Hard Peer Use, and Cig Involve. Examination of the simple effects for condition did not reveal an interpretable pattern.

TABLE 11

SUMMARY OF COVARIANCE ANALYSES FOR CONDITION-RELATED TERMS[a]

Measure	B[b]	E	ExC	ExG	ExS	ExCxG	ExCxS	ExGxS
Control Suc	.13	1.47	<1	<1	2.32	<1	1.65	<1
Control Fail	.39	<1	<1	<1	1.08	<1	<1	<1
Acad Self	.60	1.06	1.73	<1	4.11*	<1	<1	2.24
Social Self	1.08	<1	<1	<1	<1	<1	<1	<1
Affec Climate	.79	<1	<1	<1	<1	<1	<1	<1
Att School	1.14	<1	<1	<1	<1	<1	<1	<1
Peer Att School	.24	<1	<1	<1	<1	<1	3.07	2.15
GPA	.59	<1	2.35	<1	<1	<1	1.91	1.04
Unex Abs	.57	<1	<1	<1	1.19	<1	<1	<1
Non-Drug Prob	.47	<1	<1	<1	2.89	<1	<1	3.23
Knowledge	.23	<1	1.62	<1	1.46	<1	<1	<1
Gen Drug Att	.77	<1	<1	<1	1.48	4.62*	<1	2.49
Soft Att	.68	<1	<1	<1	<1	1.51	<1	<1
Hard Att	.65	1.34	<1	<1	4.66*	1.21	<1	2.14
Soft Peer Att	.54	1.16	3.43	<1	<1	1.11	<1	<1
Hard Peer Att	.52	3.59	6.77*	1.64	1.28	1.96	4.16*	<1
Alc Benefits	.60	<1	<1	1.09	2.00	2.07	<1	<1
Pot Benefits	.65	<1	<1	<1	<1	1.34	1.34	<1
Pill Benefits	.43	<1	<1	<1	<1	<1	<1	<1
Alc Costs	.61	<1	<1	<1	2.40	<1	<1	<1
Pot Costs	.67	1.03	<1	<1	<1	<1	4.01*	<1
Pill Costs	.49	<1	<1	<1	2.99	1.38	2.01	<1
Soft Peer Use	.32	<1	<1	1.22	<1	<1	1.72	<1
Hard Peer Use	.08	<1	<1	<1	<1	<1	2.88	<1
Alc Involve	.72	<1	1.85	<1	<1	<1	<1	<1
Cig Involve	.72	<1	2.13	<1	2.93	1.59	<1	<1
Pot Involve	.77	<1	<1	1.26	8.33**	<1	<1	<1

[a]The values tabled are the F-ratios for the condition (E) main effect and the two- and three-way interactions of condition with course selection (C), grade level (G), and sex (S). The degrees of freedom for the error term range from 61 to 70 (Md = 67).

[b]B is the unstandardized regression coefficient.

*$p < .05$

**$p < .01$

Discussion

Participation in Cross-Age Tutoring or School Store had little impact on students. Although a few effects were obtained, they were not hypothesized, and they did not form an interpretable pattern. Since the students liked both courses, the lack of positive effects was disappointing and puzzling. Methodological limitations of the study and possible weaknesses in the design of the courses may explain the lack of significant findings.

Statistical power was low due to the small sample sizes available in the present study. To increase power we employed analysis of covariance and examined the results with a liberal alpha level ($p<.10$) as well as a more conventional one ($p<.05$). Even with the liberal criterion the hypothesized pattern of effects was not found. Thus, the lack of effects does not seem to be due to a lack of power.

The timing of data collection for the posttest placed a limitation on the design. Many experimental students took the courses only during Fall semester. Thus, positive effects may have been obtained, but dissipated by the posttest which was conducted late in the Spring semester. We believe that if such short-term effects occurred, they were of little practical importance.

The typical experimental student participated for a single semester, and spent about 8% of his or her total school time in the course. Of this time, the student devoted about 20 hours to actual service delivery; this level of treatment intensity or duration may not be sufficient to produce the desired effects.

To a limited extent Cross-Age Tutoring and School Store were implemented as intended by the Service Opportunity model. Both courses were voluntary, reportedly pleasurable, and incompatible with intoxication. Students reported that they had acquired practical skills with long-term value, and that they had provided valued service to others. Nevertheless, the courses may have failed to stimulate student commitment to their roles and responsibilities as service providers.

Commitment is generally judged by the extent to which an individual persists in an activity even though there are "costs" or other more promising courses of action. There were some "costs" for participation in the Service Opportunities; students in School Store were required to give up some of their free time to work in the store, and tutors were expected to walk several blocks to their receiving schools. However, the "benefits" of these courses, relative to other courses, probably outweighed their "costs." Each of the courses' curricula could be mastered with little or no practice, and neither course required homework. Students who remained in the courses were assured of receiving course credit. Also, tutors who complained of boredom were assigned a different tutee. Therefore, persistence in the course can be explained by reasons other than commitment.

Several aspects of the courses may have limited the students' involvement in their roles. In Cross-Age Tutoring, students complained that the training they received was boring and repetitive. Perhaps the training was not meaningful to them because it was viewed as peripheral to successful tutoring; the training emphasized interpersonal skills rather than teaching skills. Fitz-Gibbon (Note 4) found that students perceived tutoring as a

more serious and prestigious task when their training was primarily oriented toward cognitive instruction and not social skills improvement.

The curricula for both courses appear not to have been challenging. It has been suggested that self-satisfaction or pride can only develop through confronting and mastering challenges (Szymanski, 1976). To the extent that students felt unchallenged, they had no reason to take pride in themselves. This could explain lack of positive findings for self-concept or locus of control.

Although both courses successfully fulfilled many requirements of the Service Opportunity model, they very likely failed to foster adequate commitment by the students. We believe that commitment is a necessary component of a Service Opportunity. Thus, assessing the potential effectiveness of this prevention approach requires programs that can achieve a high degree of student involvement in, and dedication to, the service provider role.

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